FREQUENCY CONVERTER CO2/6

The CO2/6 frequency converter accepts a 10·7-MHz frequency-modulated input and produces an output in Band II. The unit comprises four printed-wiring boards mounted in a CH1/27 chassis, with index pegs at positions 2 and 7. Three of the boards are individually screened.

General Specification

Input Impedance	50 ohms unbalanced
Input	10·7 MHz f.m. (±75 kHz deviation)
Input Level	50 mV r.m.s.
Output Centre Frequency	88 – 100 MHz
Output Level	5 watts
Load Impedance	50 ohms unbalanced
Power Requirement	12·0 volts, 1·0 ampere

Circuit Description (Fig. 1)

Transformer T1 feeds the 10·7 MHz frequency-modulated input-signal to one input of the balanced-mixer stage TR3 and TR4. The other input to the mixer is provided by a crystal-oscillator stage, TR1, and buffer-amplifier/phase-splitter TR2, working at the output frequency minus 10·7 MHz.

The mixer output is fed through amplifier stage TR5 to a five-section band-pass filter which selects the upper sideband.

The filter output is amplified by a four-stage tuned amplifier TR6, TR8, TR9 and TR10. The output power required by the particular application is set by the adjustment of variable resistor R31 which controls the collector potential of TR8 by TR7. The nominal output power is five watts into a 50 ohms load.

Test Sockets

Three test sockets, two on the front panel *(SKA* and *SKB)* and one internal socket *(SKC)* are provided. The front panel BNC socket *(SKA)* labelled *MON* provides a sample of the output (about 30 mV p-p into a 50 ohms load when the output power is five watts). Sockets *SKB* and *SKC* are D.I.N. sockets for use with an ME15/4 meter unit; typical readings are given in Table 1.

Output Amplifier Adjustment

Note: The unit must be powered only when a suitably rated 50-ohms load is connected to the output as otherwise the transistor will be destroyed.

Because the amplifier is usually set up as part of a complete equipment to suit the requirements of a particular installation the following procedure is best carried out with the parent unit.

1. Switch off the power supply and fit the unit into a chassis extender.
2. Terminate the amplifier with a 50-ohms load.
3. Switch on the power supply.

TABLE 1

Note: Output power adjusted to five watts.

Socket	*Measurement*	*ME15/4*
SKB Pin 1 and 3	detected r.f. output	5·3V (Meter 1 FSD = 15V)
SKB Pin 4 and 5	TR10 collector voltage	11·2V (Meter 2 FSD = 15V)
SKC Pin 1 and 3	TR6, TR8 and TR9 total current	273 mA (Meter 1 FSD = 450 mA)
SKC Pin 4 and 5	TR10 collector current	0·52A (Meter 2 FSD = 1·5A)

4. Measure the amplifier output power.
5. If the output power requires adjustment:
   (a) remove the output amplifier screening cover (front box) and tune L11 C48 C54 C55 and C59 for maximum output power.
   (b) adjust the output power using variable resistor R31 and then retune C48 C54 C55 and C59 for maximum output power.
   (c) refit the screening cover and check that the output does not alter.

References to Typical Associated Equipment

1. MD3/3 (Variable Inductance Frequency Modulator)
2. V.I.F.M. Drive Equipment EP7L/8.

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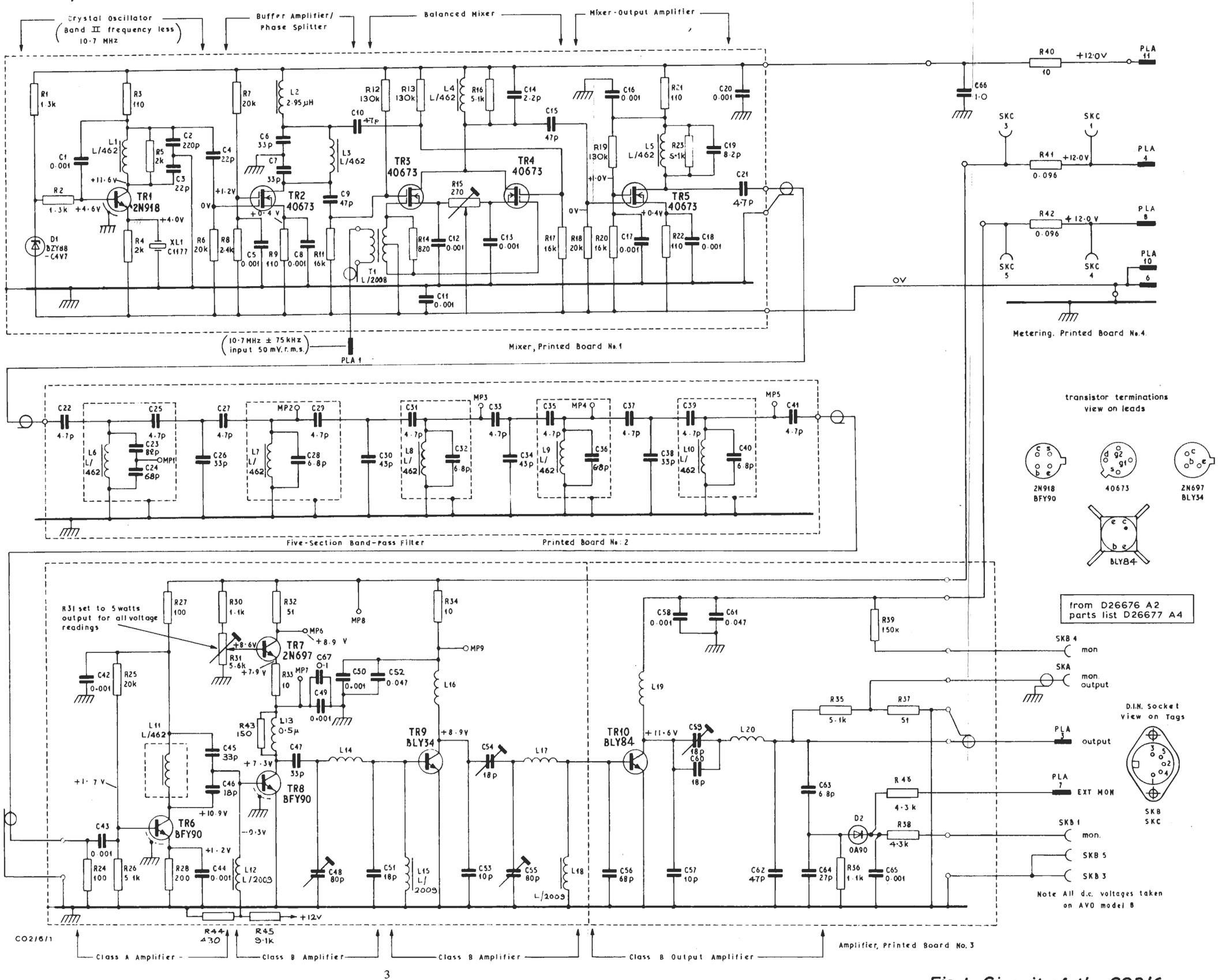

Fig. 1 Circuit of the CO2/6